This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(original). A process for inducing homogeneous precipitation of a metal oxide, wherein said metal is capable of existing in at least two cationic oxidation states, which process comprises the steps of:

(I) providing an aqueous solution of a metal in a lower cationic oxidation state, and

(ii) adding an oxidant capable of oxidizing said metal to a higher cationic oxidation state under conditions such that the mixing of said aqueous solution and said oxidant is substantially complete before precipitation of an oxide of said metal in its higher oxidation state occurs,

wherein the rate of oxidation is reduced by cooling the aqueous solution of said metal in a lower cationic oxidation state and/or the oxidant prior to mixing.

2(original). A process as claimed in claim 1, wherein the aqueous solution of said metal in a lower cationic oxidation state and the oxidant are cooled to a temperature in the range of from -10 to 10°C prior to mixing.

3(original). A process as claimed in claim 2, wherein the aqueous solution of said metal in a lower cationic oxidation state and the oxidant are cooled to a temperature in the range of from 0 to 5°C prior to mixing.

4(previously presented). A process as claimed in claim 1, wherein the metal oxide which precipitates out of solution is a product of hydrolysis of the metal in its higher cationic oxidation state.

5(previously presented). A process as claimed in claim 1, wherein the oxidant is added as an aqueous solution.

6(previously presented). A process as claimed in claim 1, wherein the metal is selected from Ce or Fe.

7(previously presented). A process as claimed in claim 1, wherein the aqueous solution of said metal in a lower cationic oxidation state comprises nitrate as a counter-ion.

8(previously presented). A process as claimed in claim 1, wherein the aqueous solution of said metal in a lower cationic oxidation state is of a concentration in the range of from 0.01 to 1.0 mol/1.

9(previously presented). A process as claimed in claim 1, wherein the aqueous solution of said metal in a lower cationic oxidation state is of a concentration of approximately 0.1 mol/1.

10(previously presented). A process as claimed in claim 1, wherein the oxidant comprises hydrogen peroxide.

11(original). A process as claimed in claim 10, wherein the metal salt or oxide has the general formula $M(OH)_{x-y}OOH_y$ wherein X is equal to the oxidation state of the metal cation M and $y \geq 1$.

12(previously presented). A process as claimed in claim 10, wherein the metal in its lower oxidation state is Ce^{3+}, the metal in its higher oxidation state is Ce^{4+} and the metal oxide which precipitates has the general formula $Ce(OH)_{4-y}OOH_y$ wherein $y \geq 1$.

13(previously presented). A process as claimed in claim 1, comprising the additional step of adding hydroxide ions to the reaction mixture so as to substantially complete the precipitation process.

14(original). A process as claimed in claim 13, wherein said hydroxide ions are provided by the addition of ammonium hydroxide.

15(previously presented). A process as claimed in claim 1, comprising the further step of isolating the precipitate.

16(original). A process as claimed in claim 15, comprising the further step of washing and drying the isolated precipitate.

17(previously presented). A process for the precipitation of a weakly agglomerated nanocrystalline powder of a metal oxide, which process comprises the steps of:

(I) inducing homogeneous precipitation of said metal oxide by a process according to claim 13; and

(ii) isolating the precipitate.

18(original). A process as claimed in claim 17, which further comprises the step of subjecting the precipitate to hydrothermal treatment.

19(previously presented). A process as claimed in claim 17 comprising the further step of washing and drying the precipitate.

20(currently amended). A process as claimed in claim [[17]] <u>18</u>, wherein said hydrothermal treatment is at a temperature of from 100 to 300°C.

21(currently amended). A process as claimed in claim [[17]] 18, wherein said hydrothermal treatment is at a temperature of approximately 180°C.

Claims 22-27(canceled).

28(new). A process as claimed in claim 17, wherein said precipitate comprises a weakly agglomerated nanocrystalline powder of a metal oxide having a mean particle size in the range of from 2 to 10 nm with a standard geometric deviation in the particle size less than or equal to 1.2.

29(new). A process as claimed in claim 17, wherein said precipitate comprises a weakly agglomerated nanocrystalline powder of a metal oxide having a mean particle size in the range of from 2 to 5 nm with a standard geometric deviation in the particle size less than or equal to 1.1.

30(new). A process as claimed in claim 29, wherein said metal oxide comprises cerium oxide.

31(new). A metal oxide powder having a mean particle size in the range of from 2 to 5 nm with a standard geometric deviation in the particle size less than or equal to 1.1.

32(new). A weakly agglomerated nanocrystalline powder of a metal oxide having a mean particle size in the range of from 2 to 5 nm with a standard geometric deviation in the particle size less than or equal to 1.1.

33(new). A weakly agglomerated nanocrystalline powder of a metal oxide as claimed in claim 32 which comprises cerium oxide.

34(new). A glass, a polishing medium for glass, a thin surface film, a phosphor, an oxygen storage material or catalyst material which comprises a weakly agglomerated nanocrystalline powder of a metal oxide as claimed in claim 32.